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Bird Day, April 21st

Bald Eagle

The Golden Eagle in Eastern New York

DAYTON STONER, STATE ZOOLOGIST, NEW YORK STATE MUSEUM

Photographs by the Author

On October 28, 1938, an immature example of the golden eagle, *Aquila chrysaëtos canadensis* (Linnaeus), was received in the flesh by the New York State Museum from Dr Edwin M. Jameson, of Saranac Lake, N. Y. The specimen bore a seizure tag issued by Game Protector J. R. La Plante of the State Conservation Department, who had taken the bird from Clarence Frenyea at Plattsburg on October 24, 1938. The eagle had been killed the preceding day.

In answer to my inquiry requesting further information regarding the specimen, Protector La Plante, under date of November 5, 1938, replied in part as follows:

This eagle was killed in the Rand Hill section of Beekmantown, county of Clinton. The bird swooped down from the air and fastened its talons into a large house cat that was in the dooryard and about 50 feet from the farmhouse. The farmer told me he thought the bird was a large hawk and that it was having trouble getting off the ground with the cat; this gave him time to get his shot gun and destroy the eagle.

When taken the eagle had a wing spread of 78 inches and weighed seven pounds six ounces. This bird was in poor condition, probably due to the fact that it had an encounter with a porcupine that left its legs and body full of quills. I talked with many of the oldest inhabitants in this section, and they told me they never saw a golden eagle in this vicinity before.

Following its arrival at the Museum the eagle, which, upon subsequent dissection, proved to be a female, was measured. Here are the principal measurements in inches: length, 34.25; wing, 24.75; tail, 15.5; bill, 1.65; tarsus, 4.0. We found the weight of the bird to be only 6¼ pounds. Therefore, it apparently had lost 1⅛ pounds in the elapsed five-day interval between its death and the time it reached our hands. Probably this loss was due principally to shrinkage of the body tissues through evaporation of moisture.

Many persons entertain the erroneous notion that both the southern bald eagle and the golden eagle are considerably heavier than is really borne out by the records. The bald eagle averages somewhat lighter than the golden. Forbush (Birds of Massachusetts and other New England States, 2: 145, 1927) indicates the weight of the golden eagle as varying from 7 pounds to 14¼ pounds but cites no specific records.

Mounted Specimen of Adult Male Golden Eagle No. 4845 in New York State Museum

Pike (Wilson Bulletin, 29: 164, 1917), gives the weight for an adult male [from Illinois ?] as 10 pounds; Bishop (Auk, 45: 212, 1928), for an adult female from Columbia county, New York, as 10 pounds; Sumner (Auk, 46: 168, 1929), for an adult male from California 4169.4 grams [approximately 9.1 pounds]; and Imler (Bird-Banding, 8: 168, 1937), for a live male from Kansas as 4323 grams [approximately 9.53 pounds] "two days after being shot and crippled by a farmer, October 29, 1935. The wound healed in captivity and two months later the bird weighed 4664 gm." [approximately 10.28 pounds].

At the time it was killed, therefore, our Plattsburg eagle weighed just a little more than the minimum for the species.

Although the Plattsburg eagle exhibited fully feathered tarsi — a sure diagnostic character of the golden eagle as compared with the bald eagle in any plumage — its immaturity is evidenced by the very dark brown, almost black, coloration of the feathers on the upper and under parts together with the whitish on the upper tail coverts and bases of the tail feathers, both sets of which are irregularly spotted with dark gray. At least four years are required for the golden eagle as a species to attain the plumage condition characterizing fully mature individuals. Owing to the reduced amount of whitish in the tail and other feathers, I should estimate the age of the Plattsburg specimen at between two and three years.

Upon skinning this eagle preparatory to preserving the specimen for future study and reference, the extent of the distribution of the porcupine quills mentioned by Game Protector La Plante was more readily discernible. Evidently not long before it was shot the bird had seized or attempted to seize a porcupine, with painful and disastrous results at least to the eagle. In all, 34 quills were removed from the legs and feet of the bird by the Museum taxidermist. An additional quill was left in place in the sole of one foot. The largest quill in the lot was 1.5 inches long and 1/20 inch in diameter at its thickest part.

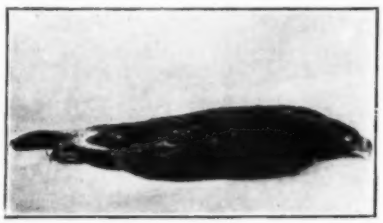
The left foot and leg bore the larger share of quills, some of which still projected outside the skin of the tarsus when the eagle was killed. Other quills had worked their way through the skin and into the tarsal musculature; some had even penetrated the muscles to the bone; and here their direction of movement had been deflected and they had come to lie in the tissue parallel with the long axis of the bone. A number of the quills also had lodged in the tissue at the tibio-tarsal joint and in the tendons of the feet; a few projected through the soles of the toes. Considerable local irritation had been set up, for both the bony parts and the surrounding tissues exhibited evidences of gangrenous infection.

The right leg carried no quills in the tarsal musculature but several had penetrated the foot and foot tendons, where the presence of congestion attested to the probable suffering the bird had undergone.

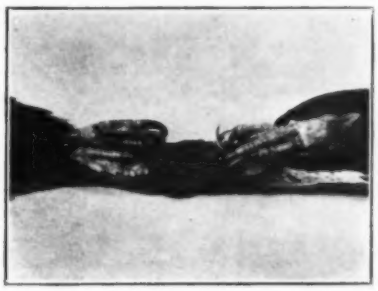
Quills were not discovered in the tissues at the bend of the wings.

Upon examination of the eagle's emaciated body following removal of the skin, the flesh appeared to be dark and shrunken. The stomach was empty and the intestine practically empty. Evidently the eagle had not enjoyed a good meal for several days. A bullet hole through the back indicated that the bird had been shot while on or near the ground. Without doubt the eagle's last days immediately preceding its shooting had been spent in great discomfort and perhaps agonizing pain.

I have come upon only a single printed account of a golden eagle carrying porcupine quills following an encounter with one of these stolid rodents. Albert Lano (Auk, 39: 258–59, 1922) reports a bird that was brought to him at Aitkin, Minn., in November 1900, afflicted



Upper and Side View of Study Skin of Golden Eagle Recently Killed near Plattsburg. Note Whitish Area at Base of Tail, an Indication of Immaturity.



Lower Legs and Feet of Golden Eagle (Right), Tarsus Feathered to Toes, and of Bald Eagle (Left), Lower Part of Tarsus Unfeathered

in a way similar to that of our Plattsburg specimen. Concerning it he wrote:

The bird had evidently aimed to make a meal of a porcupine for it was literally covered underneath with quills. In fact there were a number of quills in the roof of its mouth. . . The bird, no doubt, had been without food for some time as the body was very much emaciated and many of the quills had penetrated deep into the flesh, causing puss [*sic*] to form.

Although the bald eagle is fairly common and widely distributed in New York State, records, especially recent ones, of the killing of the golden eagle within our borders are comparatively rare. Eaton (Birds of New York, Part 2, 90, 1914) wrote as follows concerning the distribution of the golden eagle:

It is rather rare in the eastern United States and was never common in New York. In early colonial days it undoubtedly nested in the Highlands, Catskills and Adirondacks but at the present time there seems to be no evidence of its nesting within our borders. . . This species must now be claimed as an accidental, or a rare transient visitant. Within the last 60 years specimens have been reported from Schenectady, Putnam, Fulton, Chemung, Steuben, Orange, Westchester, Suffolk, Rensselaer, Herkimer, Columbia, Washington, Madison and Monroe counties. The latest record before me is October 25, 1900, when a golden eagle was captured alive in the city of Rochester, and placed in the local zoo. . .

I have found but three published records of the taking of the golden eagle in eastern New York since 1900. They are as follows:

(1) Fishers Island, Suffolk county. No definite date given, (Ruthven Deane, Auk, 19:277, 1902); (2) East Moriches, Long Island, February 7, 1919, (Horace M. Raynor, Auk, 36:421, 1919); (3) No Bottom pond, Austerlitz mountains, town of Austerlitz, Columbia county, December 10, 1927 (Sherman C. Bishop, Auk, 45:212, 1928).

Our Plattsburg specimen, then, evidently affords the first recorded occurrence of the golden eagle in Clinton county, New York, and is one of the few taken in the State in recent years. It is preserved as a study skin in the zoological collections of the New York State Museum (No. 6060).

In the course of my investigation associated with this account I have discovered three other golden eagle specimens taken in New York State which I believe have hitherto not been reported in the literature. They are as follow:

(1) Under date of December 15, 1938, Dr George M. Sutton, curator of Birds at Cornell University, writes that "The only golden eagle skin in our collection collected since 1915 is a male bird taken by Mr Ralph D. Crocker near Naples, Ontario county, New York, on May 3, 1936. This is Louis Agassiz Fuertes Memorial Collection No. 3256."

(2) Concerning specimens at the American Museum of Natural History, J. T. Zimmer, executive curator of ornithology, writes me under date of December 17, 1938: "Apparently we have only two specimens of golden eagle from New York State. One of these was collected on Long Island about 1906 but the other, an adult without sex indicated, was shot at Westport, Essex county, on October 30, 1937."

It seems probable that Professor Eaton's Suffolk county record is from the "Long Island" specimen cited by Mr Zimmer.

(3) On display among the exhibit specimens of mounted birds in Zoology Hall at the New York State Museum is an adult male example of the golden eagle (No. 4845), taken at Kingston, N. Y., April 14, 1929. Its principal measurements in inches are: length, 32.0; wing, 23.75; tail, 13.0; bill, 1.15; tarsus, 3.25. Shortly after it was killed this bird was confiscated by officers of the State Conservation Department through whose hands it was acquired by the Museum.

Many fantastic stories have been related concerning the propensity of the golden eagle for carrying off small children. Upon investigation most of these accounts have proved to be without foundation. The bird also has been reported to carry in flight wild and domestic animals of considerable size. Without doubt this eagle may *attack* animals of some size such as a full grown woodchuck or a fox, but it can scarcely *carry* such a weight on the wing. Authentic observations and experiments indicate that the largest individuals can with difficulty carry a flight load of as much as 15 pounds. When this is taken into account, the absurdity of some of the published and many of the oral claims for the bird will be recognized.

Studies of the food of the golden eagle show that its principal rations consist of rabbits and carrion. A few of the smaller mammals and birds also are eaten.

Unfortunately, owing to its large size and hawklike appearance, the golden eagle has, throughout most of the eastern half of its former range, met even a worse fate from gun-

ners than have some of the hawks. To most hunters every hawk is a "menace" to legitimate game, to be killed upon sight. And, in spite of the laws designed to afford protection for several species of our beneficial hawks, their destruction is widely sought. Ofttimes a golden eagle is "mistaken" for a large hawk and is killed with misdirected zeal. Both the eagle and the people no doubt would profit were all who carry firearms to heed the admonition "Look before you shoot." We can ill afford to lose the picturesque "King of Birds" from our avifauna through needless and thoughtless destruction.

Photograph by B. S. Havens

An Indifferent Saw-whet Owl

Where Do Birds Roost?

GUY A. BAILEY, STATE NORMAL SCHOOL, GENESEO

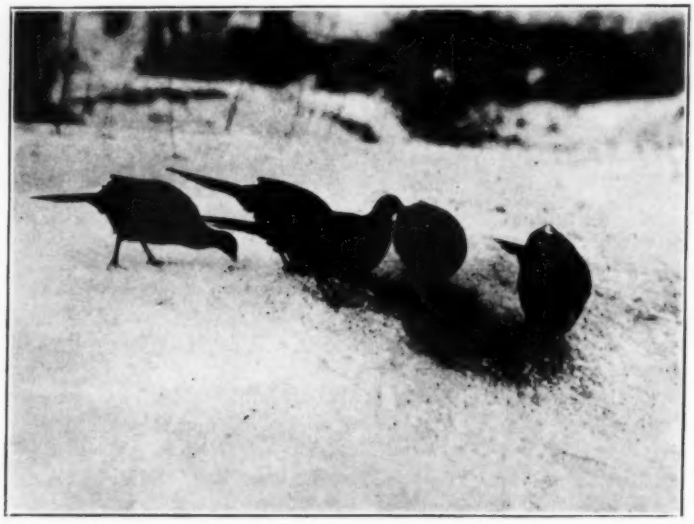
Photographs by the Author

In the late afternoons of the winter months I usually see a flock of tree sparrows feeding on weed seeds near a white cedar hedgerow. There are not many weeds or many seeds left after so many visits and I wondered what the attraction might be. One day I watched a little longer than usual to see what the birds finally did. Their numbers became fewer and fewer until all were gone. A little later one or two would reappear to pick a few seeds and then vanish. It was clear now that they just popped into the hedgerow at the bottom and then tucked themselves away in the right spot to suit their taste somewhere in the hedge. In the morning one by one they jumped down to pick up a few morsels before starting on their journey around the circuit to their various feeding places.

Here was an ideal location for a feeding place. A small handful of canary seed dropped at the base of several weed stalks would furnish them a good supper to carry them through the cold nights and also a bracing breakfast the next day.

One late afternoon I saw a hen pheasant hurry along the driveway toward a cluster of mixed evergreen trees. It was nearly dark. I could barely follow after she reached the deep shadows of the trees. I did see her jump into the lower branches and work her way up to the denser part of the trees where she was safely hidden away. Cars rushed by not more than 15 feet from her. People walking on the sidewalk were not more than eight feet from her hideout. At daybreak, however, she flew away as soon as anyone came along the sidewalk. Apparently it was what she saw not what she heard that disturbed her.

The majority of pheasants roost on the ground under the cover of brush and bushes. One season I watched a dozen or more hurry to cover each night under currant bushes. This was their regular practice for several weeks. Then one night there were no pheasants to be seen in the region. They had found other quarters. It is sometimes said that birds will abandon their roosting places if they are too much disturbed. In trying to account for the pheasants' behavior I blamed a dog that was



Ring-necked Pheasants Feeding on Grain Scattered on the Snow

chasing rabbits or some owl that had made a meal of one of their number.

Sometimes roosting pheasants are snowed under or drifting snow covers them. This year a report was brought to me that a male pheasant was found under a frozen crust with his head and neck free. After the crust was broken he flew a few feet away and alighted quite exhausted. A pilloried prisoner for two or three days, the bird was weakened from lack of food.

One day in November I saw a downy woodpecker digging a hole in a dead tree. Later in the winter it was used as a roosting place. But it was not used in the spring as a nesting place by any bird.

Many years ago I saw bluebirds settle down for the night in the old nests of Baltimore orioles. It looked to me like a good idea and I have wondered why I had never seen them use these nests since. I should like very much to focus my camera on such a nest and get a bluebird to pose on the edge or settle down and stick his head out. I have never heard of any person reporting such an observation. For my own satisfaction I should like to hear from anyone who has seen a bluebird go to roost in an oriole's nest.

House sparrows use the old nests of eave swallows and barn swallows for roosting places. These birds also use old buildings, nesting boxes and protected places about our homes. One of the interesting roosting places of these birds was a large buttonball tree on a city street where the foliage gave them ample shelter. Even after the foliage fell they still used it for a time.

Screech Owl at Opening of Its Retreat in a Hollow Tree

Owls roost in the daytime. In the winter season the screech owl hides in evergreens or holes in trees, though it sometimes uses buildings.

The interesting performance of the ruffed grouse hurling itself into a snow bank for the night I have never witnessed.

The Geneva Nature Museum

BEULAH E. GLASGOW, GENEVA

Photographs by the Author

The Nature Museum of Geneva is a museum of native living things in so far as it is possible to make it that. Ants in an observation nest, termites in a glass jar, household insects under a large lens, bees in an observation hive, frogs, snakes, turtles, bats, a deer mouse and a number of other smaller mammals besides all sorts of plant material including mosses, liverworts, ferns, twigs and wild flowers, all do their part in acquainting the children with the wild life around them. For a time a great horned owl, contributed by the Conservation Department, was the prize exhibit. The children never tired of watching him and would burst into gales of laughter at his antics.

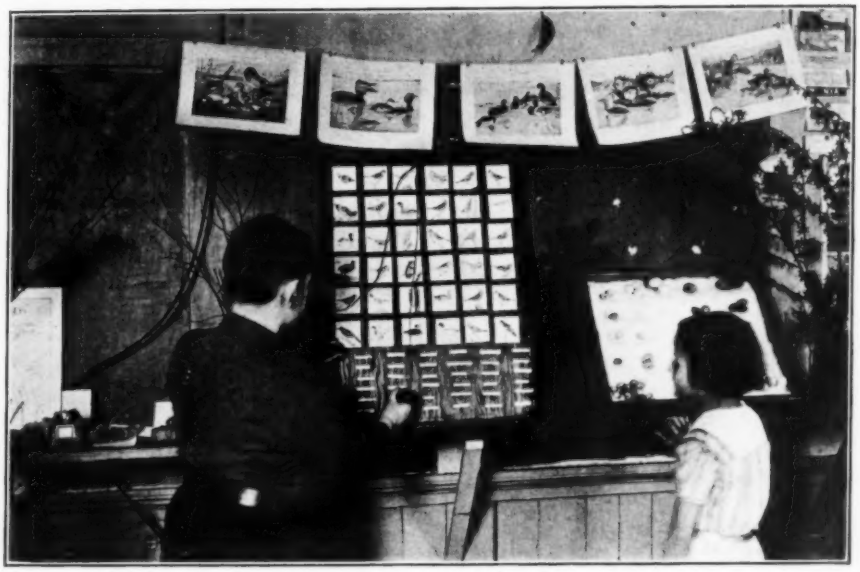
Permanent material serves as a background for the living things. Such material includes antlers of deer, shells, petrified wood, porcupine quills and foot, beaver work and wood eaten by termites. These exhibits are supplemented by charts, pictures, games, plaster-of-Paris casts, by anything in fact which can be used

to interest children in the out-of-doors and to get them to know the creatures of the wilds.

Bird study is emphasized continually. Pictures of birds appropriate to the season are hung on the walls. A collection of birds' eggs made 65 years ago including those of 25 common species is displayed in a glass case. A nature game which consists of identifying 30 pictures of birds, attracts a great deal of attention. This has electric wiring which permits a buzzing sound when contact is made between the picture of any bird and its name which is one of a list given below the chart. The children crowd around waiting for turns and get to know all of the birds in a surprisingly short time. Pictures are changed as the children become familiar with those shown. This game was constructed by the high school class in electricity. Another game which answers yes or no to questions about birds has been constructed by the children and the museum assistants.

A birds' Christmas tree and feeding shelf were featured in December. Strings of popcorn with occasional cranberries were draped around the tree. Spruce cones filled with suet, apples, wild berries and fried cakes completed the decoration. On the bird feeding shelf against a background of evergreen twigs and bright berries were mounted birds such as might come to eat the seeds, nuts and crumbs which were scattered about. These specimens were lent to the museum for this exhibit by Dr T. Odell, of the biology department of Hobart College. A gourd which serves as a container for seeds, a cocoanut containing suet with seeds, and a cedar stick with holes in which suet is stuck were displayed. Efforts to interest the children in feeding birds seem to have met with some measure of success.

The Birds' Christmas in Which Food and Feeding Devices Are Emphasized



One of the Pupils Playing the Nature Game

Lectures on nature subjects which were given after school once a week during five months of last year were attended by from 50 to 100 each week. There were lectures on winter birds, hawks and owls, bird feeding, taxidermy, early spring birds and others as they arrived through the spring migration. Lectures were given by professors of Hobart College and of the Experiment Station and by other friends, all members of the Eaton Bird Club. Throughout the season mounted birds were borrowed from the museum of the biology department of Hobart College to illustrate the lectures. Moving pictures of bird life borrowed from the American Museum of Natural History and some privately owned were shown. A member of the Conservation Department staff, came from Albany to show films at one meeting. This series of lectures is considered one of the most successful projects that has been carried out by the Museum.

An illustrated mimeographed sheet, "The Nature Museum News," dealing with timely nature topics was sent to each elementary school once a week for several months but has been discontinued for the present because of lack of time necessary for its preparation. It is hoped that this endeavor may be continued later for much interest was shown by teachers and pupils.

Children are urged to bring in material such as snakes, mice, frogs eggs, old birds' nests, insects and cocoons. These are exhibited under the name of the contributor. From time to time mention is made of them in the local newspaper.

This museum came into being two years ago and is functioning now for the third school year. It is located in a small room in the junior school. It is open four hours each school day under the direction of two National Youth Administration young women who are trained and supervised by the writer. There are no paid workers except those provided by N. Y. A. While primarily for children, the museum is open to all and is visited by many adults.

Many of the residents of Geneva are interested in the museum but so far there is little organized support. It is hoped that financial backing sufficient to insure the continuance and enlargement of the work may be secured, and that a more adequate location, preferably a museum building, may be obtained. As the school authorities heartily approve the project, there is a chance that it will grow into an institution of which Geneva may be truly proud.

Three Weeks with Hummingbirds

CURTIS E. BATES, ROME

Photographs by the Author

Hummingbirds seem to fascinate all bird lovers and bird students. I have often wondered whether this fascination is due to their exquisite beauty, their small size, their courageous spirit or their inexhaustible energy. Any one of these warrants a place in the sun for this mighty atom of the bird world. Perhaps the scarcity of hummingbirds in the East makes them such priceless gems among our feathered friends. But though they are small in size and numbers, they are truly great personalities in bird lore.

To most of us it is a red letter day even when we see a ruby-throat feeding at the flowers in our garden, but to discover its nest and to observe the little mite at close range is at once a rare thrill and delightful experience. The actual contact with the bird in observing it from day to day, gaining its confidence, studying its habits, affords a rare opportunity to acquaint one's self with this vivacious and admirable creature.

John Burroughs, who loved all Nature's creatures and spent a lifetime devoted to the natural, beautiful things about him, counted the discovery of a ruby-throat's nest among his rarest experiences.

So to find three ruby-throats' nests during one summer was to me nothing short of a miracle! I had never even seen one before, except in museums. Two of the nests were in apple trees not far from a large flower garden. The other, shown in the photograph, was in a larch tree about six feet from the ground. The former were saddled on small limbs about the width of the nest, but the one in the larch tree was anchored on a mere twig at the intersection of a cone and the twig.

The nest is an exquisite little cup about the size of a large English walnut and copiously covered with lichens and moss attached to the nest with spider webs. The interior is largely felted plant material and fine plant fibers with a lining of the finest down. On a larger limb

Nest of Ruby-throated Hummingbird about Six Feet above Ground in a Larch Tree

the nest is indistinguishable from a knot, and on a small twig, as in this case, it might easily pass for a gall.

Fortunately, the two eggs, which are about the size of ordinary white beans and of the same color, had already been laid and mother ruby-throat was patiently incubating them unattended. Her mate was conspicuously absent during the entire period of my observations, although we had seen a male among the flowers at various times previously. So, in my experience at least, the male did desert the female during the incubation and rearing of the young — and perhaps even sooner.

To my surprise the eggs were hatched on the very next day after I began my observations. And, even though I had no opportunity to photograph the eggs, I was able to photograph the young when they were only one day old. Exercising the care of a surgeon in performing a major operation, we placed the infant in a teaspoon. The utter helplessness of our patient removed the possibility of his jumping out of the spoon. We thought the temperature of a typical July day precluded

any danger of a chill to him and were later relieved to know that he suffered no ill effects from the exposure.

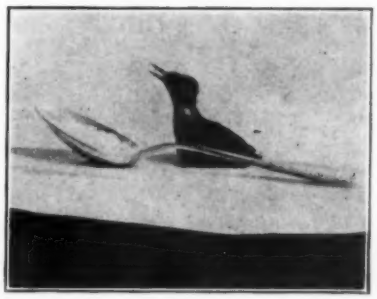
The next few days were devoted to gaining the confidence of the brooding mother. At first she was very wary and would flush from the nest when we were within 30 feet of her. No doubt this constant vigilance of the female accounts for the usual obscurity of its nest, for at a distance of 30 feet or so one would seldom spot her in the shadows of the trees because of her small size, great speed and green plumage. And even if one did happen to spot her by accident whizzing through the air, he would still have to find the nest, which is variable in location but more often than not 10 to 30 feet above the ground, and so well protected through the expert craftsmanship of its builder that one might actually touch it before he discovered it.

By visiting the nest frequently, however, I was able to get nearer and nearer before flushing her off. Soon I could sit directly under the nest and observe her at close range. Eventually I could actually touch her while she sat on her nest, but the ceremony leading up to that thrill required considerably more time and patience than is required by some other birds, notably the redstart and the chippy sparrow. Unfortunately, the location of the nest and the lack of adequate equipment prevented my taking any pictures of her while on the nest.

Meanwhile we had placed vials of sugar and water in the trees and shrubs near-by as a special inducement to become friendly with us, and we were always careful not to frighten her by any sudden movement or loud noise. Although she may have eaten some of the syrup, I am convinced she was far more interested in the insects which were lured to the sticky vials for she kept them free of insects as the nestlings grew and required more food.

When the young were one week old, they were fairly well covered with feathers and mottled all over. They were then just big enough to sit comfortably in a teaspoon. The dark feathers on the head and back and the white band around the neck appeared later.

Most of the mother's time was spent in searching for food for her young, for ruby-throat nestlings, like all other young birds, consume a lot of food and seem never to get their fill. The mother would insert her awl-shaped bill deep into the mouths of the young and pump the semidigested morsels of insects into them. When she was not searching for food or feeding her young, she would perch either in a tree or on a near-by telephone wire to preen her feathers or just to gaze around — perhaps wondering what I was up to, perhaps looking for her estranged mate or perhaps merely looking at the landscape.



Young Ruby-throated Hummingbird About Ready To Leave Nest; Age Three Weeks

When the nestlings were nearly three weeks old I fed them sugar from a teaspoon. From the start they took to it like ducks take to water and would dart their long tongues into the sugar as though they had not eaten for days. The little fellows would perch on my finger and allow me to carry them to and fro without any fuss. Although the mother would never perch on my hand with the young, as chickadees so willingly do, she never made an offer to attack the kidnaper of her babies. Her pugnacious nature, which is so often publicized, never asserted itself, even though the species is known to attack hawks. It makes one wonder if the tiny creature knew she was among friends or if she knew her natural enemies by instinct.

The young were as large as their mother when they were three weeks old and were strong enough to fly from my finger to some near-by perch. On that third birthday one was photographed again with the same teaspoon beside him. What a change in three weeks!

The following morning when I made my usual visit to the larch tree the nest was deserted, and I presume that not far away a devoted mother was teaching her two children the ways of the great outdoors.

Birds of an April Afternoon

W. H. ALLISON, POTSDAM

In northern New York the snow usually lingers until late in March, so that bird lovers welcome the first bare patches in the fields, where they may hear the faint notes of horned larks, or overhead, the clear call of a killdeer.

In 1938 a number of early spring migrants had arrived by the first of April. Then on the seventh, a cold northeast wind commenced to blow and continued through the ninth. The tenth dawned beautifully clear, but with six inches of snow blanketing the country, and a chill northwest wind adding to the discomfort of the birds. Knowing that such adverse weather should cause the birds to gather in sheltered places, early in the afternoon I started on my favorite walk — a circuit south of the town.

During the morning a hairy woodpecker and a downy woodpecker had been jabbing at the suet on my feeding shelf, two white-breasted nuthatches had taken turns at selecting sunflower seeds and three black-capped chickadees had waited their chance to dash up, give a few cheery notes and grab whole peanuts in their tiny bills. A disconsolate robin had visited a patch of lawn that I had cleared and on which I had scattered bread crumbs, but English sparrows and starlings had devoured those.

Snowplows had scraped the snow from the roads well back on the shoulders and the sun had melted what snow the plows had left. Just out of town, three sparrows were feeding on the bared ground. Two had the dark spots on their striped breasts that proved them to be song sparrows, and the third, a slightly smaller bird with finer striping and a distinctly yellowish line over the eye, was a savanna sparrow. While looking at the birds, I heard the cries of two killdeers winging their way up the Raquette river to the west. A little farther on, was a brown-headed, shiny black cowbird walking leisurely along the edge of the road.

Just before I turned off the main highway, I came upon a little flock of restless, twittering prairie horned larks with their distinctive black breast markings, and I searched in vain among them for a northern horned lark.

A crossroad parallels Garfield brook, and as I started along that road, two black ducks with their silvery wing linings flew down the brook toward the river. In a weedy stretch sheltered by gray birches, was a small flock of neat little tree sparrows and slate-colored juncos, and a vesper sparrow showed his white tail feathers as he flew up into a tree. Then I heard the warble of a bluebird flying overhead.

Leaving the road, I cut through the woods, where I came upon a band of chickadees, and near them were two golden-crowned kinglets almost hidden among the thick branches of a hemlock. The next bird was quite a different fellow. I had come to the edge of an open knoll, when a large bird silently left a hemlock close to my right, circled and alighted in plain sight on a dead branch of a white pine just across the opening. His back was toward me, but he twisted his neck until he was looking squarely at me, with an ear tuft on either side of his large head. Slowly I raised my binoculars until I was looking into the big, golden

Photograph by Guy A. Bailey
Courtesy Bureau of Radio and Visual Aids

Snow Bunting Feeding upon Grain Spread on Snow

eyes of a great horned owl! Only for a moment did we stare at each other, then he gave a heavy spring and swept off through the trees, but not to seclusion, for shortly several crows, in a clump of hemlocks to my rear, set up an excited cawing.

I came out of the woods where Parkhurst brook crosses a road leading back to town, and there was a phoebe flirting his tail and giving his short, hoarse call. Farther along, I heard the sweet, slow whistle of a meadow lark standing on a fence post. Beyond him in a cat-tail marsh some red-wings were calling lustily, when suddenly they ceased and flew into some willows, showing their vivid shoulder bands. Looking sharply about the marsh, I spied a pale gray marsh hawk drifting off over the fields and showing his white rump as he occasionally wheeled.

My "finds" for the day were about ended, I thought, for I was almost home, but the best were still in store for me. On the edge of the town, close beside the road, was a little ramshackle barn. The wind and sun had bared the ground on its east and south sides, and a flock of birds was flitting about. Nearer to me, on the snow were three horned larks, and others were scattered over the field. With my eyes on the birds about the barn, I did not use my glasses on the larks until almost upon them, then just as I thought that I had caught a glimpse of yellow on their throats, up they flew, circled and alighted close to the barn, but still on the white background of snow. Cautiously I stalked them step by step. The two nearest me turned and faced me, and their foreheads and throats were clear yellow — northern horned larks — a new bird for my "life list"! After watching them, I turned to the flock at the rear of the barn. Most of them were larks, but I spotted six black and white snow buntings, and then noticed two very dark birds. I slowly edged nearer and finally noted their black throats and chestnut backs, when I knew that I had added another bird to my life list — Lapland longspurs! Back on the road were numerous other larks of both species, and I got within six feet of another longspur walking unconcernedly ahead of me.

Only a bird lover can appreciate the thrill of a new bird, but any one who walks for pleasure or health can add interest to his trips by observing the birds that he sees. There may be no scientific value in such a habit, but increasing numbers of people enjoy the hobby of hunting birds without a gun.

Before Breakfast

GUY BARTLETT, SCHENECTADY

"But why start at such an unearthly hour? Surely the birds don't simply vanish into thin air — they'll still be around after breakfast."

Such is the usual plaint of the tyro who, having asked that he be taken on tomorrow's bird hike, has been invited to be ready to start at 3 o'clock in the morning. More likely than not the novice will suggest that he meet you later, say at 8.30 o'clock, after breakfast.

The dyed-in-the-wool bird-hiker knows, however, that it is before breakfast that his best records will be obtained. During the height of the spring migration it is, of course, true that all hours are good hours, and that the birds are active all day. During nesting season and in midsummer, however, he who waits until he has breakfasted at his usual hour misses much. The birds awaken in the cool of the dawn and sing their songs with a vigor that is lacking as the sun approaches the zenith, and that is conspicuous in the silence that reigns over the countryside before man is astir.

Consider the record of a day late in May of last year. The season had been unusually early. New arrival dates had been recorded for many species, and now practically all the migrants had gone through. And, for the purpose of the comparison made that day, the migrants were not considered. The site was a house more rural than suburban, but still not a farm. Across the road was a steep hillside meadow, topped by light woods. Similar woods flanked one side, beyond a small orchard. On the opposite side were open lawn and gardens. To the rear was a willow and "jungle"-bordered creek flowing into a swamp and thence the river. The land in small compass offered a wide variety of environment, and it had been decided to include only those records which could be obtained from the house itself, without benefit of field glasses, in two three-hour periods, the first from the time of the first bird's awakening, and the second at noon.

Photograph by Guy A. Bailey
Courtesy Bureau of Radio and Visual Aids

Three Young Eastern Phoebes Just Out of the Nest

A 3.15 a. m. (standard time) the alarm clock delivered its message, and the day was started. The morning was windless, the sky was cloudy, the thermometer read 54 degrees, and the grass was heavily covered with dew.

So far as the human eye could tell, it might have been the middle of the night. In fact, moonlit nights were far brighter. The first neighborhood bird to awaken that morning was a veery. At 3.26, with only slight indications of daybreak apparent, a few "whips" of the thrush were heard from the woods on top of the hill. Hardly had it ceased calling when a song sparrow sang twice, with a lengthiness that had been lacking in its midday songs. Two minutes elapsed before the next bird, a robin, started its song. Within a few seconds other redbreasts joined in the chorus, and almost without intermission they continued as the most musical until 4.45.

At 3.30 the veery resumed its call, while night herons quawked in flight over the house, a wood thrush atop the hill started its full song, and two field sparrows on the hillside swung into action.

It was not until 3.45 that the first crow of the barnyard cock was heard, on a farm a half mile across the fields. There was now a hint of red along the horizon, and there was sufficient light to see the log book. Chipping sparrows in bushes beside the house awakened and sang, and bullfrogs in the distant swamp augmented the chorus.

A yellow warbler awoke at 3.48, and a minute later the phoebes which were nesting on a window sill jumped into activity, not silently as during midday but with rapid and loud repetitions of their name. Other than the night herons, they were the first birds seen in flight. Then in rapid succession came the plaintive notes of mourning doves, the bark of pheasants, more night herons in flight, and a loud rattle and long succession of the notes of the yellow-billed cuckoo. A few minutes more, and bronzed grackles began to clamor in the willows along the creek. A house wren, which lived each year at the edge of the woods and which refused to be coaxed closer to the house, bubbled into song; and, again in the distant farmyard, the gobbling of a turkey was heard. Young starlings became audibly hungry at 4.04, judging from the squawks from the usurped flicker hole in an elm across the road.

Fast and low from over the hill there then came, at 4.06 o'clock, the flight of nonbreeding starlings which roosted by the hundreds, or

even thousands, on islands down the river. Not many call notes were heard, but the swish of wings was readily audible. On other mornings the starlings had been observed leaving their island roosts, fanning out in several directions in large, compact, low-flying flocks. Quite different were the return flights to the roosts just before sunset. Then the birds flew high, usually in groups of one or two dozen, and irregularly over a period of a half hour or so. In the morning flight they passed in a matter of seconds.

The crows now awakened in more distant, heavier woods. No sooner had one cawed than it was joined by many more, in volume sufficient to drown out all save the numerous, much closer and equally vigorous robins.

By 4.12 a. m. it was really light. Birds were now in flight, and records of the rest of the morning included many species which flew in to feed. In the remainder of the first hour of the observations there were green herons from down the river; squealing cowbirds, mostly high in the trees; goldfinches, darting at each other in flight, the while they sang; the whistled "pewee" song of the chickadee; swifts in silent flight; red-wings active in the willows; a catbird in its imitative glory in the wild grape of the creek-edge jungle; a northern yellow-throat at the edge of the garden; a killdeer crying its name as it coursed over the wet meadow where it nested; and the chatter of the three pairs of Baltimore orioles whose nests were now completed. High in the tall elms lining both sides of the road were busy warblers, but they were migrants, not summering birds.

The first hour ended with 27 species accounted for, most of them in full song and most of them unseen.

The first visitor to the year-round feeding station, one of the several downy woodpeckers which regularly fed there, arrived at 4.31. Beyond it, in the orchard, there alighted a small flock of chattering waxwings. The tumbling song of a bobolink came from the back meadow, and several swifts were in low flight over the yard. Not until 4.40 was the English sparrow first recorded, chattering in a barnyard a hundred yards or so away.

By 4.45 o'clock the day was well advanced, judging from the renditions of songs. The robins had quieted down, and the other birds seemed to follow their lead. But then the blue jays were to be heard, and for several seconds their clamor was all-permeating. A white-breasted nuthatch arrived for its suet at 4.48.

The distinctly different songs of two closely related species were then heard simultaneously. After a preliminary loud rattle a yellow-billed cuckoo at the edge of the orchard was in the midst of its long, fairly rapid succession of "cu-coo" calls, when a black-billed cuckoo in the woods beyond it joined in its slower, shorter succession of three and four-note calls.

A pair of black ducks called in the bog beyond the creek and noisily rose into flight down to the swamp at 4.52. It was then, too, that a pair of bluebirds quietly went to work in the orchard. Five minutes after the ducks had left the bog a woodcock was seen to fly down the creek and drop in there; and a redstart became active in the wild grape tangle.

The robinlike notes of the red-eyed vireo were first heard beside the house at 5.03, and in another two minutes the decidedly different notes of the yellow-throated vireo were heard on the opposite side of the house. At 5.12 a male indigo bunting flew to the top of a tall elm stump, its favorite perch, and rendered its song. Beyond it a wood pewee in the willows plaintively called. Over the creek flew a few tree swallows.

A couple of minutes later, thanks to a dog which sought a drink in the stream, the whir of ruffed grouse was heard, and the bird was seen to dodge between the willows as it flew low toward the woods. Next was seen a ground-feeding flicker along the roadside. At 5.17 occurred the first sign of activity on the part of the least flycatcher, its "chebec" being repeated several times from the orchard. A kingbird next was heard along the creek, and a meadow lark sang in the back meadow. Two hours had elapsed. It was still only 5.25 a. m., and 47 species had been logged.

The third hour was less fruitful. Barn swallows were in flight over the garden, a kingfisher announced its arrival with a rattle and settled on its favorite perch over a minnow-populated pool in the creek, a crested flycatcher screamed from a treetop, a warbling vireo was heard across the road, and a hairy woodpecker was seen at the feeder. The volume of song during this hour was not to be compared with that outburst which greeted the rising sun.

Fifty-two species had been recorded in the three hours ended at 6.25 o'clock. All had been noted from the porches on opposite sides of the house. Almost without exception the birds had been heard repeatedly. Only the summering birds had been included, and the day's record was not unusual. Many more species would have been added by going only a little afield, and on other mornings still other kinds were recorded from the house. By now it was slightly warmer, the dew had almost vanished, and there were intermittent northeast breezes and a cloudiness that indicated rain — a shower that did not arrive until late afternoon.

From 10 until 1 o'clock a similar count was made from the porches. The temperature was up to 74 degrees, there was a slight breeze from the east, and the sky was partly cloudy. Thirty-eight species were listed in that period, including five which had not been seen, or heard, in the early hours. They were the sparrow hawk, hummingbird, bank swallow, and savannah and Henslow's sparrows. On the other hand, there were no records for the green heron, ruffed grouse, woodcock, yellow-billed cuckoo, kingfisher, hairy woodpecker, kingbird, pewee, blue jay, wood thrush, veery, waxwing, red-eyed and yellow-throated vireos, redstart, English sparrow, grackle, cowbird and field sparrow. Most of these birds were, of course, still in the neighborhood, but they were silent and not to be identified from the house without binoculars.

The sun was at its height. Not until the approach of sunset would the birds again be vocally active, and even then the songs would lack the profuseness, the vitality and the completeness of those of the early morning hours.

Gulls with Colored Bands

SAMUEL C. HARRIOT, NEW YORK CITY

Although the herring gull is one of the most abundant birds along the Atlantic coast, there are many questions about this species that remain unanswered. Thousands of these gulls breed on islands off the coasts of Canada and New England. Adult birds begin to arrive at their breeding grounds early in the spring. By the middle of the summer a large percentage of these birds have young. The fledglings grow rapidly, and at the end of August most of them have assumed their juvenal plumage and are ready to fly. In the fall both adults and young leave the breeding grounds to spend the winter months along the beaches and about the harbors of the eastern and Gulf seaboards. Where do the immature gulls that we see in winter come from? Do birds from the same colonies winter together? When do these birds return to their natal colonies, and at what age do they breed?

Our lack of information is all the more amazing when we realize that tens of thousands of herring gulls have been banded, and special studies made of their winter distribution. In the banding of these birds prior to 1937, however, only regulation aluminum Biological Survey bands were used, and recoveries have been limited to those birds that were captured or picked up dead by someone who would take the trouble to notify the authorities in Washington. Winter-distribution inquiries were made on a basis of banding returns that were, therefore, to a large extent limited by chance.

Early in 1937 the field work committee of the Linnaean Society of New York planned a cooperative herring gull survey. Colored celluloid bands were to be employed for the first time on a large scale. The fledglings at each colony selected were to be banded with distinct color combinations, in addition to the Biological Survey bands. It was hoped that these combinations could be recognized in the field as sight recoveries and in that manner the natal origin and age of each bird known. In other words, the gull survey would deal in live birds that might be identified over and over again as they made their way south along the coast to their wintering grounds and returned northward in the spring.

The cooperation of the United States Biological Survey, the Northeastern Bird-Banding Association and of many individuals was secured, and in the summers of 1937 and 1938, 11 of the herring gull breeding colonies from the Gulf of St Lawrence to Block Island sound were visited. Colored bands were placed on

Photograph by Allan D. Cruickshank

Gulls Flying over New York City Garbage Dump

the legs of 15,000 fledglings. About two-thirds of these birds were banded at two colonies; nearly 7000 fledglings at Kent's island, N. B., Canada, and about 1500 fledgings on islands in Muscongus bay, Maine. Each bird was given from two to three colored bands in addition to the Biological Survey band. For example, birds banded at Muscongus bay in 1937 carry a yellow band above a blue band; birds banded in 1938 carry a blue band on one leg, and a yellow band on the other leg.

The advantages of the color-banding method and the results obtained can, perhaps, best be illustrated by the writer's own experience with banded gulls in New York City this past winter. At that time of the year, our New York City gulls gather in large numbers to feed at garbage dumps near the outskirts of the city in Brooklyn, the Bronx and other near-by areas, while smaller flocks of more sophisticated birds can be found, daily, at the Fulton Fish Market in downtown Manhattan on the East river.

It was at the Fish Market that most of the writer's observations of banded gulls were made. Altogether, a total of 57 censuses were taken in that locality by the writer and other members of the Linnaean Society during the months of November, December, January and the first part of February, and a total of 123 banded gulls were seen. Five of these gulls wore only the Biological Survey band. The other 118 gulls carried colored bands in addition to their aluminum band. With the aid of these colored bands we were able to determine that they came from seven distinct colonies.

The number of adult and immature gulls present in the immediate vicinity of the market during November and the greater part of December average about 300 birds on most of our visits. Toward the end of December this number dropped to about 200, and from that time on varied between 50 and 200 birds. On a number of visits, no banded gulls were seen. At other times, some of the gulls were perched on tops of sheds and other buildings, with their feet in such a position that examination of their legs for bands was extremely difficult even with high-powered glasses. Many of the birds were constantly on the move, however, so that by

spending at least an hour in observation, we were able to examine almost 70 per cent of the birds present for bands. Fortunately, there were a number of fishermen at the pier who seemed to take an interest in the gulls and frequently fed them. On those occasions we were able to examine most of the birds at close hand. The aluminum bands, incidentally, are almost invisible at a distance, and since all of the gulls with single aluminum bands were seen while feeding on the piers at close range, it is quite possible that others were overlooked.

Perhaps the most interesting feature of our observations was the small number of first year banded gulls seen in January as compared with the relatively larger numbers seen in November, although only nine censuses were taken in November as compared with 26 in January. The first two censuses were taken on November 6th and 7th. On those days 11 first year birds from five different colonies were seen. In January, only two first year birds were regularly seen, one from a colony in Canada, and the other from a Massachusetts colony.

As mentioned above, about two-thirds of all the gulls banded were marked at Kent's island, New Brunswick, and in Muscongus bay, Maine. A comparison of our sight recoveries of birds from these two colonies shows that each colony was represented by three first year birds early in November. In January, first year birds from Kent's island were regularly seen, but never more than one bird on each census. On the other hand, no first year birds wearing the Muscongus Bay colors were to be seen on any of our 26 censuses in that month.

Photograph by Allan D. Cruickshank

Young Banded Herring Gull

Photograph by Allan D. Cruickshank

Immature Herring Gull Banded at Isle of Shoals, Maine, Summer of 1938; Sight Record and Photograph at New York City, December 30, 1938

The total number of gulls banded in 1937 was about a third less than the number banded in 1938 and, as was to be expected, there were fewer sight recoveries of second year birds. Most interesting in this connection was the number of sight recoveries of second year gulls from Muscongus bay as compared with those from Kent's island. At least two birds from each colony were seen at different times, yet Muscongus Bay birds were seen on more censuses than were the Kent's Island birds. On the last day of January one second year bird from each colony was observed.

It should be mentioned that whenever possible, plumage notes have been made, and the special value and interest of these will be appreciated when one realizes that the approximate age of each bird is known. The gull survey committee is compiling all recoveries received to date, and will eventually publish a summary of the results. To the end of January there were close to 1000 acceptable sight recoveries in the files and somewhat less than 400 reports of dead or captured birds. These figures are for gulls banded in both 1937 and 1938.

The present paper, while containing no data of great significance in connection with the distribution and migration of the herring gull, recounts certain recovery methods and indicates the interest that may be aroused in obtaining sight recoveries. Similar observations have been made on the Boston Fish Pier and a comparison of data at such points, from year to year, will be of value. Those desiring more information on this cooperative project should write to Gull Survey, American Museum of Natural History, New York City, or care of the New England Museum of Natural History, Boston.

It is expected that approximately 10,000 additional gulls, not yet hatched at this writing, will be banded with a new set of color combinations in 1939.

How Do Eastern Goldfinches Find Cosmos Seeds?

ALBERT R. SHADLE, BIOLOGY DEPARTMENT, UNIVERSITY OF BUFFALO

For many years cosmos plants have grown in my garden; sometimes as scattered plants but in the tulip bed a massed growth of cosmos has followed the tulips each year. This massed growth of cosmos has been allowed to stand each autumn, partly for the lovely bank of flowers, but largely because it has always produced quantities of seeds which served as food for the little Eastern goldfinches, *Spinus t. tristis*.

From the time the first cosmos seeds begin to ripen until some time after frost has killed the plants, many times daily the goldfinches, in groups of from two to ten or 15, visit the drinking pool and cosmos patch. Until last summer only red, pink, and white cosmos grew here and I had never noticed the birds show any preference by feeding on the seeds of any particular color of cosmos. Last summer, for the first time, I planted orange colored cosmos and placed it as a solid bed across one end of the garden. Thinking that this orange cosmos would furnish plenty of seeds for the goldfinches, I pulled out most of the other cosmos. Where they usually have grown as a thick bank, only a dozen of the white and pink cosmos grew up and produced seeds, but a few yards away the bank of orange cosmos was a mass of color and full of matured seeds.

In the fall I noticed that the goldfinches were not so numerous as usual in my garden and upon examination of the cosmos plants, I found that the small group of a dozen pink, red and white cosmos were kept almost stripped of seeds, in fact, the seeds were eaten before they were mature and dry. The orange cosmos, 30 feet away, were a mass of bloom and laden with seeds which seemed to be practically untouched by the birds. This condition continued through September and October, even after the frost had killed the plants early in the latter month. I had hoped that the birds might later, perhaps, by accident, find this supply of food after the frost had destroyed the orange flowers, but this did not happen. Although the plants were dead, on October 25th the orange cosmos were still laden with seeds which were not being taken by the goldfinches, while hardly a seed could be found on the other twelve cosmos plants. When the red, white and pink cosmos grew in former years where the orange cosmos are this year, the birds fed there very readily; so the location of the plants had nothing to do with it.

Have the goldfinches learned to associate food with those red, pink and white flowers and not with orange ones? The shape of all cosmos flowers is largely the same but the foliage of the orange cosmos is quite different from that of the others. I am contemplating an experiment for next summer to try to determine whether or not the goldfinches respond to color. Will the goldfinches learn rapidly that the plants with orange flowers also produce food material and avail themselves of the opportunity to feed there? They missed a feast last autumn. Next summer there will be more of the other colors of cosmos in my garden.

The University of the State of New York
Bulletin to the Schools

Issued semimonthly during the school year by the State Education Department

CHARLES F. PROBES, *Editor*

This bulletin is sent without charge to all schools and educational institutions of the State. To others it will be mailed postpaid for 50 cents a year, 5 cents for single copies.

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MARCH 15, 1939

From My Study Window

STANTON D. KIRKHAM, CANANDAIGUA

The old maple by my study window has scarcely changed in appearance in a quarter of a century, having apparently accomplished its growth. Beneath it are lilacs, themselves venerable, but still blooming as bravely as ever. The maple is in blossom even before the forsythias, and its flower buds are a rare shade of red, a mandarin red I would say, and these brilliant buds, together with the silvery white branches, create a charming effect against a cerulean background. Beyond the maple is the hardy garden with its winding paths and its many tenants, old and old-fashioned as well, with a deep planting of shrubbery, which has attained the height of a wood. Time has contributed a mellow aspect, and as I look upon it from my window day by day and year by year, it seems very intimately related to me and I enjoy the serene companionship of those who cheerfully grow old together. When the maple and the lilacs put forth their leaves and flowers I renew myself with them once more; and when their branches suffer from the weight of snow and ice, I feel as if I myself had been hurt. From my little excursions to the hills I return always to this window to think of what I have seen and to rest among these friends, who are themselves so supremely restful.

In March a bluebird may pause in its flight to rest upon the upper branches of the maple. Arriving grackles seek it also and announce their presence. The dove utters its soft lament and the little screech owl whinnies in the darkness. Brown creepers, nuthatches, sapsuckers, downy and hairy woodpeckers examine the trunk from time to time, and chickadees are constant visitors. During the migration the hermits and olive-backed thrushes chant their mysteriously beautiful forest measures. Juncos, white-throats, and later, white-crowned sparrows, search for seeds beneath this tree; and before the leaves are fully out I have a glimpse each year of flitting warblers as they lisp their woodsy songs on their way to the thorn bushes. I am sure to see the black-throated green and the black-throated blue, the Tennessee and the Nashville, the redstart, the magnolia, parula, chestnut-sided, myrtle, black-poll and black-and-white; and some years, the Cape May, the bay-breasted, the mourning, and that brilliantly beautiful sprite, the Blackburnian. In the lilacs I never fail to glimpse, at least once, the Canada with his necklace of jet, while the ovenbird and the water thrush step daintily upon the mosses, and the Maryland yellow-throat, Wilson's blackcap and rarely the yellow palm, flit in the shrubbery. There too, I usually detect the winter wren; and from thence hear each spring the most truly, sylvan of all songs — the voice of the ruby-crowned kinglet.

Photograph by A. T. Beals

A Banded Female Black-throated Blue Warbler

Years have passed since my children played under this tree; and they have made nests of their own. Generations of little rabbits have danced in the twilight beneath it; generations of squirrels have frisked in its branches. Robins and vireos have nested in it and poured out their songs. Cicadas have celebrated the summer days in their blistering challenge, and

tree frogs have croaked didactically. Through its budding branches I now see Vega in the eastern sky like a blue white diamond, and beneath it the great cross of Cygnus.

Presently the white crickets will be intoning their rhythmical chant; and when the asters line the roadsides, very small beings, unknown to me and unseen, will be faintly *seeing* in delirious ecstasy. In the misty blue of October days the yellow maple leaves will drift to earth, one by one; while the garden and the pasture vibrate to that all-pervading music, the love-death song of the insect hosts.

Stanton Davis Kirkham

Stanton D. Kirkham, son of a cavalry officer, was born in Nice, France, in 1878. He received his education in the public schools of California and at the Massachusetts Institute of Technology. In his extensive travels he has visited Mexico, South America, Europe, Asia and Africa. Between 1899 and 1927 he published more than a dozen books. Mr Kirkham lived a vigorous outdoor life until, at the age of 43 years, he was suddenly stricken with illness while in Peru. Since that time incurable illness has forced him to withdraw from active, physical exertion. Nonetheless his observations on nature and his courageous outlook on life in general may well be an inspiration to all.

Mr Kirkham is a grandfather and many of his shorter stories have been written originally for his children or his grandchild.

Acknowledgment

Friday, April 21st, has been designated as Bird Day for the schools of the State.

This Bird Day issue of the Bulletin to the Schools was compiled with the cooperation of the New York State Museum. The editor desires to express his appreciation to Dr Charles C. Adams, Director of the Museum; to Dr Dayton Stoner, State Zoologist of the State Museum; and to the contributors of the articles.

The illustration of the bald eagle on the cover of this issue was reproduced from the work of Rex Brasher, bird artist, whose contributions to ornithology have won him national recognition.

My Bird Neighbors

DOROTHY W. CALDWELL, MOUNT MC GREGOR

When I first came to this beautiful Adirondack foothill country I was little prepared for the treats in store for me here nor did I dream that I was to become a more enthusiastic bird student with each year of my residence.

Few of us are privileged to live year in, year out, on the crest of a wooded ridge, with windows that look out into the treetops and bird neighbors all about; in winter, to have friendly chickadees come daily for food, and even to feed from the hand; to be awakened occasionally by the loud drumming of a pileated woodpecker close by; to hear from one's room in the spring the songs of hermit and wood thrush and veery, and one memorable spring a winter wren for several days. In a locality like this, starlings and English sparrows find little to attract them and are seldom seen. We miss some favorites, like the bluebirds and orioles which we have only as casual visitors during migration, but there are compensations. Last year a rose-breasted grosbeak nested near the garden; for several seasons a pair of myrtle warblers has nested in one of our grand old pines; and for years a pair of red-eyed vireos has swung its cradle near my laboratory window.

Even in winter when our bird population is at its lowest ebb, the season may hold surprises, for our winter residents vary greatly from year to year both in numbers and in species. The black-capped chickadee, white-breasted nuthatch, hairy, downy and pileated woodpeckers, blue jay, barred and screech owls we have as permanent residents. Some winters we have flocks of from 50 to 100 goldfinches, cheery and gay in their winter coats. They may forsake us entirely in winter, however, or occur but sparingly. Occasionally we have red-breasted nuthatches, frequently a brown creeper or two, sometimes golden-crowned kinglets, pine siskins, juncos, tree sparrows or pine grosbeaks, and on rare occasions a wandering flock of cedar waxwings. One year we had hordes of redpolls. They came to my window sill feeding station in such numbers that I had to open an annex at another window. The majority were common redpolls but there were a few hoary and a few greater redpolls in the flocks. If there is an unusual abundance of small birds, we may have an occasional northern shrike or a sharp-shinned or a Cooper's hawk. One

winter a small flock of ruffed grouse came close to the laboratory daily at dusk and it was most interesting to see half a dozen of the big birds feeding from the tips of poplar branches that swayed perilously with their weight.

My most thrilling winter visitation came several years ago. For weeks I had seen scales from the hemlock cones scattered on the snow. Could it be the work of the large flock of goldfinches we had that winter, or could we possibly have crossbills with us? One day I happened to see a flock of goldfinches feeding in some of the hemlock trees. Daintily they reached between the scales leaving them intact and removed the minute winged seeds; after the edible portion was consumed they dropped the tiny plumes on the snow. So I had demonstrated to my satisfaction that goldfinches were not responsible for the hemlock carpels on the snow; and, though I continued to see the scattered scales, now on the lawns, now near the trails, I was never fortunate enough to find at work the birds responsible for their removal. Then one day after weeks of watching outdoors I happened to glance out of my laboratory window and there in a leafless oak close by were three white-winged crossbills, one beautiful male glowing in full winter plumage and the other two less gaily attired but all with the unmistakable white bars in the wings. I hastily called an associate and we both had a good though brief look at them before they moved to another tree for a few moments and then flew out of our sight.

For me 1938 was a memorable bird year here in many ways. I always hope to hear as well as see the fox sparrows when they come through in April. Some years they loiter about the laboratory for a week or so and occasionally lift their beautiful rich voices. Once one sang intermittently all day long. Last year in early April I woke to glorious music outside my window. There must have been over a dozen fox sparrows at the head of our little lake in full song for possibly an hour. It is hard to believe that even in their northern homes they can surpass the performance they gave here early that gray April morning.

Some years we have yellow-bellied sapsuckers as migrants only; other years they nest here. Last year apparently they nested near the garden and visited daily a local feeding station. By August, when their progeny were well grown but still in their curious smoky immature plumage, the whole family was much in evidence working at some of our canoe birches. Through August and September it was most interesting to hear and see them at their favorite birch clump and also to see the hummingbirds try to elude the vigilance of the sapsuckers and flit in to drink at their holes. There were so many drillings and the hummingbirds are so much swifter in flight than the sapsuckers, that although I saw them driven away many times, they often slipped back for a stolen sip after the driller of the holes had settled down on another branch for his supper. I had read Frank Bolles's vivid descriptions of such forays and counted it a rare privilege to see them for myself.

Perhaps the most unusual concert of my life came to me at dusk early in June last year. I was standing on the marshy shore of one of our little lakes listening to the thrush vespers, as I often do in June, when the singing assumed the suggestion of a definite pattern, almost as though the birds were instruments in a fairy orchestra, each with his own part to play, and the woodwinds, the strings and the brasses all represented. There were several veeries giving their ringing downward spiral and when they had finished, the olive-backed thrushes seemed to continue the refrain with their upward chant, then the downward spiral of the veeries again and again the upward response of the olive-backs. This happened over and over, sometimes the veeries singing almost in unison, sometimes dropping in one after another in interwoven spirals of song, and accompanied by a chorus of several hermit thrushes mingled with fragments of the song of a Canada warbler and the occasional soft trumpet call of a red-breasted nuthatch.

It hardly seems possible that 1939 can bring as many joyous experiences of so many kinds as did 1938, but one of the deep satisfactions of bird study is the uncertainty as to what surprise may come with the next turn of the trail or the next moment of quiet waiting with eyes and ears open to receive.

Attention, Birds! — "Custom-made" Houses

EDMUND J. SAWYER

Building boxes and houses for birds was a very early hobby of mine. It has become an increasingly serious pastime through the years and yet its first appeal has never been lost or lessened. That appeal could scarcely be increased, for it has always had a complete fascination. That, indeed, is my reason for telling this story. I may perhaps have the crowning satisfaction of inducing or encouraging other boys to enjoy, through building birdhouses, some of the keen pleasures that I have found and am still finding in providing the right kinds of nesting sites for birds, watching them build and raise their broods with success.

Some hints may be found in my own experiences, for I had to learn "the hard way" — without benefit of instruction or advice.

First a word of caution. In designing and placing the birdhouse consider always the needs and instincts of the birds themselves. That may seem quite needless to say; yet too often it is a point sadly overlooked. Many of the houses one sees show little or no regard for the birds' own reactions to them; they reflect, rather, some person's own notions of beauty, "cuteness" or other form of human attractiveness. They are pretty, fancy, elaborate, perhaps ingenious and original; in short, they are everything but that which the birds want.

Again, even when the house is inspired by a real wish to attract birds, the preferences of the birds are likely to be neglected and the houses, therefore, go unoccupied. This is because the habits of the prospective bird tenants are either not known or, if known, their significance is not understood and kept in mind.

My interest in birdhouses began when I was about eight years old. Already a lover of birds, I began building for the wrens and tree swallows, which were the two species that visited our village backyard. And the boxes then made were built and placed according to what I had observed at first hand in watching these birds nest under natural conditions. Since then I have designed, built and placed houses for most of the birds which under any circumstances can ever be induced to nest in a man-made contraption. That includes species such as the western house finch, the red-shafted flicker and the western bluebird; birds whose very existence was at first unknown to me. The point in this is that 50 years' experience has proved conclusively that my first wren and swallow houses, based though they were on a child's simple idea, were correct in all their essentials; and this, not only for the birds I had tried to provide for, but for all other species which are potential birdhouse dwellers.

The features essential to any birdhouse are illustrated in the accompanying plate which I have labeled, Wisdom in the Birdhouse. The word "wisdom" here means especially the wisdom of the birds. For, the plans show merely an easy and convenient way of copying the salient features of the natural nesting sites which instinct has taught the birds are wise. The plate very largely tells its own story. It remains chiefly to add specifications for a few of the more desirable bird tenants. These are as follows:

	INSIDE WIDTH (inches)	DEPTH, FROM ENTRANCE (inches)	ENTRANCE DIAMETER (inches)	DISTANCE FROM GROUND (feet)
Bluebird	4–5	8–10	$1\frac{5}{8}$	8–20
Tree swallow	4–5	8–10	$1\frac{1}{2}$	8–30
Crested flycatcher	$5\frac{1}{2}$–6	9–12	$2\frac{1}{8}$	15–40
House wren	4–$5\frac{1}{2}$	7–9	$1\frac{1}{8}$	8–18
Purple martin	6–$7\frac{1}{2}$	6–8	$2\frac{1}{8}$	14–60

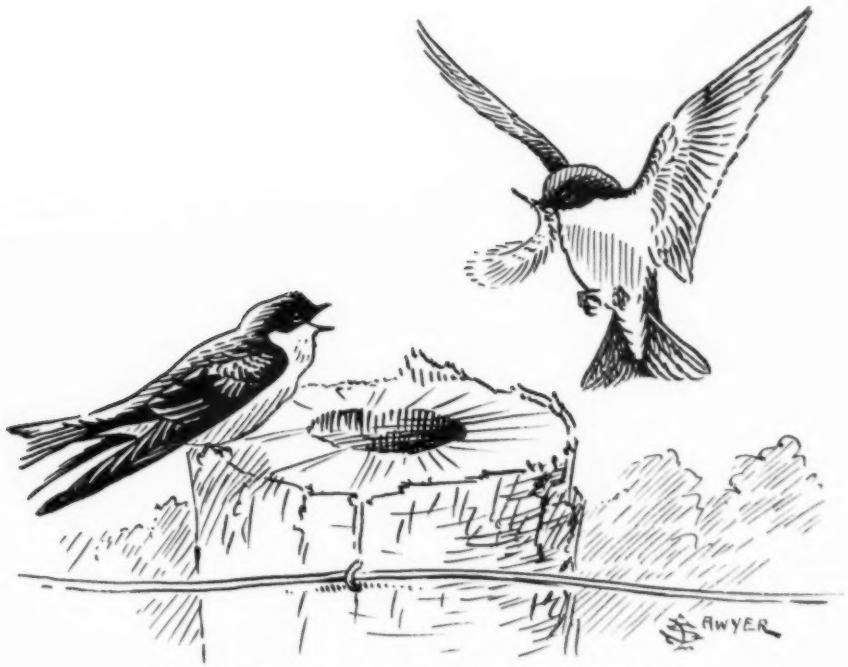
In the case of only the purple martin a house of more than one room is desirable. Such house may be of any form, just so each room shall be a complete unit conforming with specifications as given for the martin in the above table; there may be any number of such rooms, for a martin colony may number 30 pairs or more; a dozen pairs would be ordinary.

To return to my early experiences, I had found nests of bluebirds, tree swallows and

Steps in Making an Artificial "Woodpecker Hole"
For Bluebirds, Wrens and Tree Swallows — When placed on Other Buildings
WISDOM IN THE BIRD HOUSE
An Easy-to-make Form of "Woodpecker Hole" — Recommended For All Species, Including Woodpeckers

house wrens in deserted woodpecker holes and often in hollow fence-posts. Into nests in the latter situation I had often looked and seen the sitting bird on its eggs. Usually my small hand, with fingers tightly pursed together, could just be squeezed into the actual nesting cavity, for the latter was nearly always merely the hollow which had been left when the "heart" of the post (usually about two and a half or three inches in diameter) had decayed from long exposure to rain and snow water. So why, thought I, need the birdhouse be more than a few inches wide? A further observation was that the entrance, especially, was usually just wide enough to admit the bird. Again, such entrance was invariably in or near the top of the nesting hollow. To be sure, none of the birdhouses to be found about our town followed these specifications; but I also knew that few of these houses were occupied. I was so simple minded as to suppose that what the wrens were doing in the old apple tree next door and what the bluebirds and swallows were doing in the fence-posts about my uncle's farm in the country they would also do where I should provide similar nesting sites. And, in short, that they did.

One of my first attempts at being a woodpecker for the benefit of wrens was, in a sense, too convincing even for the birds! Finding a dead spot low down in an old apple tree in our backyard, I began to excavate with a jackknife. When the hollow was about as deep as the knife-blade could make it, but still only large enough to hold a baseball, the inevitable school-bell rang and so I did not again see the prospective "home" for another three hours. And by that short time, lo, a wren had already carried into the hole a quantity of twigs. The cavity was obviously and ridiculously too small for a complete nest. Hastily I threw out the twigs, feverishly I enlarged the cavity to barely possible nesting size. But the wren, no doubt sensing a disturbance to her first efforts, did not renew her work. Many years later, by the way, and a thousand miles westward (for it



"I found nests of . . . tree swallows in hollow fence-posts."

was in Nebraska), I found a wren successfully nesting in the abandoned hanging nest of a Baltimore oriole; therefore in a cavity no wider and not much deeper than my early "woodpecker hole."

Now, speaking of woodpeckers, the idea of building for any woodpecker himself might well suggest carrying coals to Newcastle. Yet flickers, which of course are true woodpeckers, occasionally elect to occupy a box put up for other birds. And a number of times I have built for flickers with success, for both the eastern and the western or red-shafted species. One experience with an eastern flicker was especially interesting and instructive. This flicker, after having selected the box which had been placed 30 feet up in a maple, could be heard for several days in succession tap-tap-tapping inside the box. On climbing up to investigate, I found that he had merely been furnishing his house with the bed of chips which his instinct called for. In hacking off these chips from the inside of the house he had incidentally somewhat rounded out the interior. Thus I learned that even a woodpecker, as well as any other prospective tenant of a birdhouse, is best left entirely to his own resources in the matter of interior furnishing.

That recalls to mind another instance of learning something from a nesting bird. My teacher in this case was a western tree swallow. I was watching this swallow as it entered to inspect the house I had placed on the tall post of an old corral. Surprised when the bird had not emerged after two or three minutes — more than the usual time for such an inspection — I became somewhat alarmed when a quarter of an hour passed with no reappearance of the bird which had entered the box. Then, on going out close to the post, I could plainly hear a sound of scratching at frequent intervals. Then the trouble was easy to guess. A board was quickly leaned against the post to enable me to reach the box and to see into it by lifting the lid: this done, I lifted the swallow out and tossed it into the air, none the worse, but possibly a bit wiser, for its imprisonment. The inside of the box had been a trifle too smooth for the swallow's claws. The bird had been springing up toward the exit but was unable to cling there and so to escape. All was remedied by merely placing a long twig upright in the box.

What to do about English sparrows and starlings, bugaboos of the birdhouse builder, has long been the paramount question. Yet, so far as I am concerned, it is a question no longer. Although my answer to that question is quite indirect in its origin, it is none the less practical and conclusive. Again my teacher was a bird — this time, a bluebird — and perhaps it will appear that the lesson was somewhat mutual. Also, as remarked before, it has an obvious application to starlings, English sparrows and other undesirables.

I had been living alone all winter in a log cabin which I had built in a wild and rugged section of Montana. Now it was spring, and spring meant the possibility of companionship, if only the companionship of birds. Accordingly I made and erected four birdhouses and placed them near the four corners of my cabin. One was intended for red-shafted flickers, one for western house wrens, the third for bluebirds and the fourth for western tree swallows. All were duly selected by the proper tenants. But the tree swallows found their claim hotly contested. The near-by bluebirds, whose nest had been completed before the swallows appeared on the scene, were determined that the swallows should not occupy a house so near their own. For an hour or two the swallows would approach and try to enter their box, only to be driven away each time by the male bluebird, who was ever on guard. That went on day after day until the swallows began to appear less often and otherwise to show signs of losing interest. When, one day, they failed to appear at all I decided something radical must be done about it. A complicating part of the problem was that the bluebirds must not be dealt with too severely, for they must not be frightened away entirely; their presence, if only they would let the swallows build, was quite as desirable as that of the other birds. Well, I first climbed to the swallow's house, which was on a tall post, carrying with me one end of a long string and a bunch of spruce twigs (this could just as well have been a rag or a piece of other flappy material). Tying my end of the string close to the box and then tying the bunch of twigs to the same string a foot or two distant, I was ready to descend. The rest was even simpler. The loose end of the string was carried to the cabin, where it was passed through a hole that led inside. Now,

from inside the cabin, I took in the slack and secured the end of the string to a nail conveniently placed beside my table-easel.

Much to my relief, the swallows soon returned to the house they longed to call home. At almost the same instant the male bluebird made his accustomed hot attack. But just as the bluebird alighted on the nesting box my hand gave the cord a wild jerk. A bunch of spruce boughs bounded up and about the startled bluebird and the latter beat a hasty retreat. For the next hour or more the bundle of spruce had little rest. So long as the swallows alone were on or close beside their house, however briefly, the bundle rested and peace for the time reigned. But the instant the bluebird replaced the swallows the twigs were spruce indeed and violently alive. Before the day was over the bluebird "got the idea" so thoroughly that his attacks, after gradually decreasing in number and spirit, had ended. At once the swallows began to build. Their nest was completed in the next few days and, with never another ripple to mar their peace and contentment, their five eggs were duly laid and I had the final satisfaction of seeing the five lusty young safely launched into the great outdoors.

A New Experience with Bird Baths

DR GEORGE S. BRITTEN, SYRACUSE

Last summer during the very hot and dry weather of August it was my custom to entertain some of my small grandchildren by turning on a spray from the garden hose, to which was attached at the nozzle end a whirling garden spray set to throw a very fine spray. They enjoyed it greatly.

The weather was so very hot that we placed the spray in the shade of some tall elms for protection against the direct rays from the sun. We did this usually about noon. One day we forgot to turn off the water when we were through and a couple of hours later went out to do so. To my surprise I found a few starlings and sparrows enjoying the spray, and I waited to watch their antics. It was not long before the robins learned how, and while two hours passed we stood or sat watching the fun. At one time I counted 14 robins on and about the lawn near the spray. Two catbirds took their turns several times; and a pair of yellow warblers had the time of their lives, on two or three occasions flashing greenish yellow through a rainbow made by the spray and sunshine that leaked through the leaves of the trees.

A pair of bronzed grackles took several stately walks through the spray. Three or four song sparrows enjoyed a thorough shower and cleansing but did not appear very often. A hummingbird made a visit, darted swiftly through the spray, poised humming in midair — and zip through he goes again. This he repeated several times, then lighted on a stake near-by, gave a little trembling flutter and shake, and off he flew to the trumpet vine. Most of the visitors took a shower with apparent joy and did not return for quite a while; but many had a real time of it, while a few remained for nearly half an hour. Four cedar birds or cherry birds came the first day, but I did not see them enter the spray. They remained on the wet ground at the limit of the spray and just fussed and splashed in the small pools that formed.

Needless to say that after this experience grandpa started the spray every sunny afternoon that he thought the birds might come, grandchildren or not, so that the performance was repeated many, many times. I think, except for the first performance, the one I enjoyed most was when a whole flock of cherry birds came into the tree at one time; then gradually one or two at a time ventured into the spray and pools about the spray. I could not count them. They changed positions too often. There probably were between 20 and 30.

I think there ought to be some way of arranging a discount with the water meter man when the water is used for bird baths.

Binoculars, Their Selection and Use

J. ALDEN LORING, OWEGO

The designated power of a field glass, for example "8x," indicates that the instrument magnifies the user's natural eyesight eight times or that an object eight miles distant appears to be brought within approximately one mile of the observer. Diameter of the front or "objective" lenses is usually indicated in the metric scale; thus a glass stamped or otherwise designated as an "8 x 30" or "8 x 30 mm" is an 8-power glass having objective lenses 30 millimeters in diameter.

The lower the power of a glass the easier it is to hold steady and the greater the illumination (relative brightness or amount of light gathered by the lenses and transmitted to the eyes) as well as, usually, the wider the field of view, that is, the amount of territory seen through the glass. Just as enlarging a photograph brings out its imperfections, so, while a high power glass gives a larger image, it is hazy and not so distinct. For nature work such as checking on color, special markings and other identification characteristics, an abundance of light and sharpness of image are important factors.

High power glasses, 14x to 24x (the maximum binocular power) are used to study waterfowl, hawks and other shy birds. To obtain best results with such instruments they should be mounted on a tripod for it is impossible for the observer to hold them sufficiently steady in his hands.

The terms "field glass" and "binocular" are synonymous. There are two distinct types of field glasses or binoculars, Galilean and prism. Each type is divided into two classes, solid frame and hinge frame Galileans. All prism glasses have hinge frames; in one style each side is focused individually for each eye with eyepieces only, while in the other style the two sides are focused simultaneously. Only the latter type is satisfactory for nature work.

Galilean glasses have straight tubes or barrels and lenses only, while prism glasses have both lenses and prisms. Study the accompanying cuts of these types; by following the dotted lines you observe that the light in one passes through the objective lenses in a straight line while in the other, light passes through the objectives to prisms where it is deflected to other prisms and thence to the user's eyes.

Since the distance between the eyes of different individuals varies, the hinge frame is necessary to provide adjustment for proper interpupillary distance. The pupil of each eye must register exactly in the center of the instrument lenses or the user will see two circular fields of view that may overlap. Under such conditions he can not obtain the maximum sharp focus possible with the glass although he might think otherwise for even with such a handicap he still sees better than with the naked eyes. Hinge frame glasses, therefore, are the only type suitable for family, group or class work.

Galilean glasses will stand rougher handling than prisms and are better for juvenile users who are apt to bump or drop them. They are low in power, usually 2x to 4x. In a Galilean with a higher power the field of view is so limited that it is useless for nature work, while on the other hand a glass of this type with adequate field of view is large and heavy and costs as much as or more than a much better low priced 6x or 8x prism binocular.

Because of low power and usually large objectives, Galileans give a sharper, clearer image than 6x or 8x prisms. This may deceive the user when he changes from one type to the other and he may mistake degree of illumination for power; some time may elapse before he discovers the superiority of the prism glass.

When buying a glass deal with a reliable firm and if you are not familiar with such instruments have an expert do the testing and selecting. If you deal with a mail-order house have an understanding that if the glass is rejected your remittance will be refunded. Many firms will send glasses on approval if you can supply a bank reference. Name or describe the glass, state the price you wish to pay and indicate the use for which the glass is intended. When ready to buy a better instrument you can often get an allowance on your old glass.

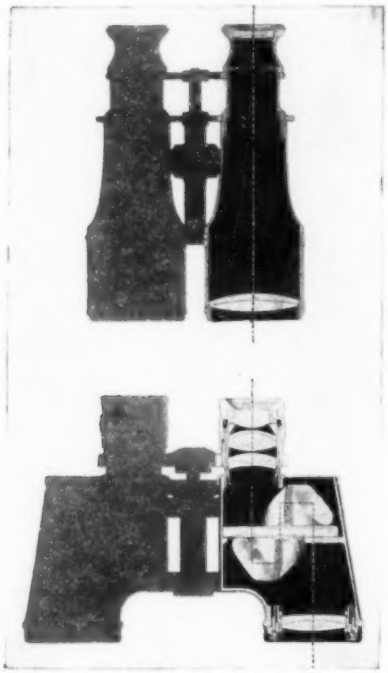
Solid frame glasses cost from 35 cents upward. Do not pay less than $7 for a new one or $5 for an optically perfect used glass. Hinge frame glasses cost from $12.50 upward, new, and $7 upward, used. If your pocketbook is lean, be content with a 3, 3½ or 4x Galilean glass.

Suppose we test a solid frame Galilean first. If there are finger prints on the lenses, breathe

on them and wipe gently with a soft clean handkerchief; never touch the lenses with your fingers. Hold the glass to your ear and shake it; if you hear anything rattle reject it. Hold it against the sky and look through both ends of both sides for lens defects. Hold the glass down in front of you and as you rotate the focusing wheel make sure that both barrels move in unison.

The best subject on which to focus is printing such as a signboard with various sizes of lettering. It should be at a distance of 100 feet for a Galilean and 100 yards for a prism glass. Extend both barrels to their limit, place the glass to your eyes with a finger on the focusing wheel and run the barrels back slowly to the point of maximum focal sharpness. Note that at this point a slight turn of the wheel affects this focus. If, when the glass is focused, you see two circular fields of view, the glass does not fit your eyes and should be rejected.

In case you must purchase a more expensive hinge frame glass, subject it to all the above tests. Adjust for proper interpupillary distance until a single field of view is obtained. Then check for alignment, training the glass on a service wire or cable at the same distance for which it was focused. If the lenses are properly aligned you see a continuous wire across the entire field of view as it appears to the naked eyes. If the wire appears to be broken or if, when you look at an object you see "twins" the glass is out of alignment and should be rejected.



Courtesy Bausch & Lomb Optical Company

Top: Galilean Field Glass
Bottom: Prism Binocular

The practical prism binoculars for nature work is the central wheel and right eyepiece focusing type which, like the other type for that matter, corrects some forms of optical defects in your eyes. In making the selection, do not be misled by "fake prisms," glasses stamped "prism," with sides built out to resemble (sometimes accurately) prism binoculars. Four years ago they sold for from $7.50 to $9 and cost the dealer $1.50.

Look the glass over carefully before putting it to any tests. Note the scale for pupillary distance adjustment in the center of the frame between the eyepieces. After you are used to your glass you will pay no attention to it but will automatically secure the correct adjustment; in fact, it will be but a short time before most of the described focusing acts will become second nature.

Note that the right eyepiece turns right and left and that in the center of the scale is a zero (0) sign, while to right and left are the signs for plus and minus. In the center of the stationary tube or on the arm directly under the cap, is a white dash. If you have normal eyesight or are using the glass over your eyeglasses, the zero mark should register over the dash.

With right eye shut or the objective covered with a handkerchief, if you can not shut an eye without squinting, focus for the *left side first*, using the wheel. Now reverse the procedure and turn the right eyepiece *only*, either to right or left, until you have the focus. You have now corrected any optical difference there may be in your eyes. Note your reading on the eyepiece scale, plus or minus so many points or fractions, and whenever it becomes changed turn it back to that reading before using, and thereafter you do not have to repeat this "open and shut" process, but can focus with the wheel only and both eyes open. Should you have focused on a subject say 100 feet away, while the focus will not be absolutely accurate for subjects at shorter distances, if the subject

is exceedingly active, pay no attention to the right side but keep it in as sharp a focus as possible with the wheel alone.

The reason we cautioned you to be sure to focus for the left side of the glass first, was because, as you have discovered, both barrels move when the wheel is turned, so had you focused for the right side with the eyepiece first, when you focused the other side with the wheel you would have thrown the opposite side out of focus.

Pay as much as you can for a glass; the best is not too good if you can afford it. Six, 7 or 8x glasses are best for general nature work in Eastern United States; our preference is a 7x35. The lowest price for which new 6, 7 or 8x guaranteed prism that can now be obtained (prices change from time to time) is $18.50 and they run as high as $250. If your glass is not provided with a neck strap, tie a shoestring to some part of the frame and make it a set rule to place the strap over your head the instant you remove the glass from its case, thereby cutting down repair charges resulting from dropping it and breaking an eye-cap, springing the frame or putting the lenses or prisms out of alignment.

Courtship among Birds

WALTER N. HESS, DEPARTMENT OF BIOLOGY, HAMILTON COLLEGE

Among the first pets that I ever owned as a boy was a pair of young pigeons that was given me by a neighbor. All went well until one wintry day a hawk carried the female away. The male missed his mate but in spite of his misfortune he continued to occupy his home alone until early in April. At that time he disappeared and I thought that I would never see him again for I feared that another hawk had taken him. On the third day, however, he returned with a new mate. Memory of this boyhood experience later led me to wonder how birds choose their mates.

If we look about us in the springtime we can see birds clad in bright plumage, putting forth every effort in song and action which they possess to win a mate and establish a home. In bird society as well as in human society a period of courtship precedes the choosing of mates. The methods employed by birds are songs, the display of plumage, drumming, dancing and fighting as well as other peculiar and interesting ways in which birds display their emotions at this period.

As a rule, during this period of courtship, which for most birds lasts several days, the male alone gives vent to these remarkable exhibitions, while the female sits passively by. Some ornithologists try to make us believe that the male usually accepts the first female which offers herself to him and that she bases her choice on the brilliance of his plumage, sweetness of song etc.

Let us now consider the methods of courtship employed by some of our common birds. One of our earliest arrivals in the spring is the bluebird. As in the case of many birds, the males usually arrive a few days before the females. If he should happen to be one of last year's brood, and if he should happen to meet his mother or father, which a year before were his best friends, they no longer know him, and like most mothers in the bird world, she will fight him till death if he insists on staying about the old home. Driven out by his parents, he usually goes to some near-by locality and patiently awaits the arrival of his future mate. At last he hears her call and like a flash he begins to sing more loudly and more sweetly than before. He hastens in her direction and as he approaches her he puts his whole self into his pleading song. She flies by him apparently unconcerned but he follows not far behind her. For hours he continues to follow her and keeps up his call. Still she ignores him. Even in spite of her cold reception and frigid manner his courage never fails him. If another male approaches he will dash at him with greatest fury, and the battle does not cease until one is defeated and goes away while the victor returns to the female and continues his wooing. Still she flies on unconcerned, but after hours of patient and persistent endeavor on his part she finally becomes more friendly and in a short time they start a new home together.

In the spring of the year before his mate arrives we often hear the male yellow hammer, or flicker, drumming on some distant tree or tin roof. Since he does not sing as most birds do, this seems to be his way of calling his mate. Few birds are more persistent in their courting habits than Mr Flicker. He will pursue the bird of his choice continuously among the branches, or from tree to tree, often throwing

himself against her as she alights, his purpose apparently being not to give her any rest. In fact, he acts as if he is trying to compel her on the spur of the moment to consent to his proposal.

It often happens in the flicker family that several males compete for the same female. This rivalry always seems to be of the most friendly sort, for such a thing as a combat does not appear to occur between the males. In her presence each of the competing rivals becomes an actor. One by one they flash their bright yellow feathers at the same time they call to her in soft pleading tones. All this time the female sits passively by and apparently ignores their many efforts. Not infrequently this female will resist for several days the numerous proposals of her suitors, but finally something prompts all of the males but one to leave and the question is settled.

The nearest approach to ideal love-making among birds appears to occur among goldfinches. During the month of May groups of these birds collect in an old tree or thicket and there hold what has been likened to a musical festival. Here the males sing their sweetest notes and the females at times chirp and call. It seems very much like a competition in musical ability before the females. At all times throughout these festivals, which last for two or three days, the most friendly feeling seems to pervade the entire company. Following these festivals the birds are seen in pairs.

It seems very probable that the great majority of our birds take a new mate each season. This is denied by some ornithologists who maintain that birds once mated remain true to one another until death. When one considers that most of our birds are not together as mates from about the first of August until the following April or May it seems very probable that a new mate is chosen each season. Some birds, however, do not choose a new mate each year, notable among which are some of our larger birds such as the pigeons, hawks and owls which mate but once and live together throughout life.

All of this goes to show that the great instinct, that of finding a mate and rearing young, which dominates the actions of the entire world of birds at this season is not so very much different from that of their human cousin.

The Buffalo Ornithological Society

HAROLD D. MITCHELL, BUFFALO

Photographs by the Author

On November 13, 1929, a group of eight men decided to form the Buffalo Ornithological Society, as a section of the Buffalo Society of Natural Sciences. The purpose of the society was to make a scientific study of the bird life of the Niagara Frontier region, to record migration data, changes in relative abundance of different species, to determine the breeding bird life of the region and to observe the habits of our local birds.

Each member was asked to spend as much of his spare time as possible in the field and to report frequently his personal observations and discuss various phases of bird life at the meetings. It was decided that the permanent records of the observations of all members should be placed in the hands of two statisticians, who would also act as censors, and thus eliminate all questionable records.

For 20 years previous to 1929, our oldest charter member and honorary president, James Savage, and Thomas L. Bourne had taken a Christmas census of the birds of Buffalo and vicinity. As a continuation and broadening of this census, the first field trip of the new society was held during Christmas week in 1929. Three groups participated, covering the territory within a 15-mile diameter with Grand island as a center. Forty-two species of birds were observed that year, and the same territory has been covered each succeeding year. In recent years approximately 12 parties, averaging about three each, have covered the territory, and 94 species have been observed on these Christmas census trips.

Not a month of the year passes without at least one scheduled field trip, and there are many early morning trips in the Buffalo parks during the migration season, in which many Boy Scouts, Girl Scouts and others take part.

At the height of the spring migration season in mid-May a bird census of the western New York area and the near-by Canadian territory is undertaken, in which practically all members participate.

Since the Niagara Frontier is in the path of water fowl migrations, the society has also conducted spring and fall duck census trips, the former occurring in early April, the latter in October. Some of the most unusual records have resulted from the October census trips, for there are usually more wanderers and rare migrants present during the fall migration than during the spring migration. A bird club which is inactive in the field in the autumn misses many delightful experiences.

One of the first projects of the society was a migration chart for the year 1930. This was placed on exhibition at the Buffalo Museum of Science. So much interest was shown in this one-year chart that it was decided to have a five-year chart for the 1931 to 1935 records, inclusive. Each species was checked on the chart on each day it was observed during the five-year period. This project was carried through to fulfilment and is of unusual interest to all bird students, showing the year to year variation, the extent of migration dates of each species, nesting dates etc. Not only is this chart a help to our members, but from it an outsider visiting the museum can obtain a clear picture of the bird life of Buffalo and vicinity at different seasons of the year and also an idea of the relative abundance of each species.

The composite records of the society will form the basis for an annotated checklist of the birds of the Buffalo region, soon to be published.

Meetings of the society are held bimonthly in the Buffalo Museum of Science. One of our members usually addresses these meetings on some topic of which he has made a study. Other members have entertained us with slides and moving pictures. Some meetings are given over to debates and panel discussions. In order to broaden our knowledge of nature, outside of local ornithology, we have enjoyed talks on a wide range of subjects.

The society has combined with the Audubon Society of Buffalo and The Garden Center Institute of Buffalo in sponsoring several lectures by noted authorities on birds and nature subjects. The Buffalo Museum of Science has cooperated by extending the use of its auditorium for these lectures.

During the first few years, stress was laid on identification of birds, in order to acquaint the fast increasing membership with the species they might expect to find in local field observations, and to form the basis for later, more scientific bird study projects.

Early in 1935 the society started the publication of a monthly mimeographed journal, "The Prothonotary," a name chosen because of the discovery of a breeding colony of prothonotary warblers at Oak Orchard swamp. Bird observations, monthly weather data, activities of the society, notes and short articles of interest make up each issue.

Members are now at work on various projects such as local lists, breeding bird censuses, bird-banding activities, bird photography, collection of specimens needed for museum display and for establishing subspecific identity etc.

While we expect to continue to record migration data and to work on various projects, we hope always to combine such work with enjoyable field trips to points of ornithological interest. We have for several years joined the Pymatuning Group in excursions to the Pymatuning Reservoir region and to Erie, Pa., and last May we entertained them in Buffalo. Several of our members have joined with the Burroughs Audubon Nature Club of Rochester, and with the Eaton Bird Club of Geneva in their field trips. Excursions across the border to Hamilton, Ontario, and along the shores of Lake Erie also have been pleasant experiences.

We believe that through our efforts the public has become more bird-conscious and is gradually being educated to the value of birds and the necessity of preserving them for the enjoyment of future generations.

Prothonotary Warbler at Nest Cavity

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